

REMARKS

Applicants have carefully reviewed and considered the Examiner's Office Action dated July 2, 2008. Reconsideration is respectfully requested in view of foregoing amendments and the following comments.

By this Amendment, claim 1 is amended and claims 14-19, withdrawn from consideration as being drawn to a non-elected invention, are canceled. Accordingly, claims 1, 4 and 8-13 are pending in the application.

Claims 1 and 8-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over JP 2003-155552A (hereinafter referred to as "JP '552"). This rejection is respectfully traversed.

While JP '552 is directed to a continuous vacuum carburization method and apparatus for the same, its disclosure is clearly remote from the claimed invention for the reasons discussed below. The claimed invention is directed to a process for manufacturing metallic material which has superior toughness and wear resistance. In particular, as described in paragraph [0007] of the present application, the claimed invention provides a carburizing process for metal wires, metal strips or metal pipes which has far less variation in the amount of carburization in the material and is free of oxidation or sooting. JP '552 is directed to improving productivity by eliminating time loss in a continuation carburization treatment and to keep flexibility even in a vacuum carburization treatment in which each process is different.

According to the claimed invention, at least one carburizing atmosphere (5) and an associated carrier gas atmosphere (6) are formed in an enclosed space (1) so that the carrier gas atmosphere (6) is spatially continued from the carburizing atmosphere (5)

without interruption or physical barriers (such as doors) as shown in Figure 2 of the present application. As a result, a long continuous metal wire, metal strip or metal pipe may be continuously moved throughout the carburizing atmosphere and carrier gas atmosphere to carburize the continuous material and then cause the carbon carburized in the continuous material to be diffused into the inner sections of the continuous material without interruption of the continuous movement.

In contrast, JP '552 uses a plurality of separate heating chambers 6, 7, 8, 9 and moves a tray 20, in which the works to be carburized are received, from one heating chamber (e.g. 6) to the next heating chamber (e.g. 7) to carburize the works as shown in Figure 1 of JP '552. In other words, JP '552 teaches dividing one carburization treatment into plural steps and separately and intermittently performing the steps in the plural heating chambers. During the process taught by JP '552, the heating chambers would have to be opened and closed frequently. Moreover, it would be impossible for the method of JP '552 to continuously move a long continuous material throughout the separate heating chambers. That is, JP '552 teaches one of ordinary skill in the art to intermittently move work from one chamber to the next thereby teaching away from the claimed “**continuously** [moving or] passing one of a continuous material selected from the group of a metal wire, a metal strip and a metal pipe through the carburizing atmosphere and the carrier gas atmosphere to carburize the one continuous material”, as recited in independent claim 1. That is, JP '552 teaches against the claimed invention.

Unlike the claimed invention, JP '552 does not form “a carrier gas atmosphere, in which the carburizing medium gas does not exist and which is spatially continued from the carburizing gas atmosphere by supplying and discharging carrier gas to an from

another area adjacent to the carburizing area in the enclosed space”, as recited in independent claim 1. Instead, JP ‘552 discloses a heating chamber 6 in which inactive gas is introduced, a heating chamber 7 in which carburizing gas is introduced, a heating chamber 7 in which inactive gas is introduced and a heating chamber 8 in which an inactive gas is introduced. All of the chambers are separated by doors (see paragraph [0025] and paragraphs [0028]-[0030] of the English language translation of JP ‘552). The disclosure of doors in JP‘552 between the inactive gas and the carburizing gas teaches against the “continuously passing one of a continuous material ... through the carburizing atmosphere and the carrier gas atmosphere” of independent claim 1 of the present application. Accordingly, it is submitted that the Examiner failed to set forth of *prima facie* case of obviousness and withdrawal of this rejection is respectfully requested.


In view of the foregoing amendments and remarks, it is respectfully requested that the rejections of record be withdrawn and that a Notice of Allowance be issued indicating that claims 1, 4 and 8-13 are allowed over the prior art of record.

It is believed that no fee is due, however, the Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 22-0261, under Order No. 31238-225900.

Should the Examiner believe that a conference would advance the prosecution of this application, the Examiner is encouraged to telephone the undersigned counsel to arrange such a conference.

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Respectfully submitted,



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